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NEWS	11 AUG 02	IFIPAT/IFIUDE/IFICDB reloaded with new search and display fields
NEWS	12 AUG 02	CAPLUS and CA patent records enhanced with European and Japan Patent Office Classifications
NEWS	13 AUG 02	STN User Update to be held August 22 in conjunction with the 228th ACS National Meeting
NEWS	14 AUG 02	The Analysis Edition of STN Express with Discover! (Version 7.01 for Windows) now available
NEWS	15 AUG 04	Pricing for the Save Answers for SciFinder Wizard within STN Express with Discover! will change September 1, 2004
NEWS	16 AUG 27	BIOCOMMERCE: Changes and enhancements to content coverage
NEWS	17 AUG 27	BIOTECHABS/BIOTECHDS: Two new display fields added for legal status data from INPADOC
NEWS	18 SEP 01	INPADOC: New family current-awareness alert (SDI) available
NEWS	19 SEP 01	New pricing for the Save Answers for SciFinder Wizard within STN Express with Discover!
NEWS	20 SEP 01	New display format, HITSTR, available in WPIDS/WPINDEX/WPIX
NEWS	21 SEP 14	STN Patent Forum to be held October 13, 2004, in Iselin, NJ
NEWS EXPRESS	JULY 30	CURRENT WINDOWS VERSION IS V7.01, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 11 AUGUST 2004
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NEWS LOGIN		Welcome Banner and News Items
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* * * * * STN Columbus * * * * *

FILE 'HOME' ENTERED AT 15:05:57 ON 14 SEP 2004

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.21

0.21

FILE 'CAPLUS' ENTERED AT 15:06:06 ON 14 SEP 2004

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FILE COVERS 1907 - 14 Sep 2004 VOL 141 ISS 12

FILE LAST UPDATED: 13 Sep 2004 (20040913/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.44

0.65

FILE 'CAPLUS' ENTERED AT 15:06:30 ON 14 SEP 2004

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FILE COVERS 1907 - 14 Sep 2004 VOL 141 ISS 12

FILE LAST UPDATED: 13 Sep 2004 (20040913/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s carbon monoxide (1) hydrogen (1) carbon dioxide (1) water (1) methanol

1074557 CARBON
 23925 CARBONS
 1083274 CARBON
 (CARBON OR CARBONS)
 161023 MONOXIDE
 961 MONOXIDES
 161535 MONOXIDE
 (MONOXIDE OR MONOXIDES)
 136127 CARBON MONOXIDE
 (CARBON(W) MONOXIDE)
 835326 HYDROGEN
 5420 HYDROGENS
 838372 HYDROGEN
 (HYDROGEN OR HYDROGENS)
 1074557 CARBON
 23925 CARBONS
 1083274 CARBON
 (CARBON OR CARBONS)
 417334 DIOXIDE
 6352 DIOXIDES
 418937 DIOXIDE
 (DIOXIDE OR DIOXIDES)
 195179 CARBON DIOXIDE
 (CARBON(W) DIOXIDE)
 2162050 WATER
 241121 WATERS
 2214777 WATER
 (WATER OR WATERS)
 170202 METHANOL
 660 METHANOLS
 170548 METHANOL
 (METHANOL OR METHANOLS)
 L1 70 CARBON MONOXIDE (L) HYDROGEN (L) CARBON DIOXIDE (L) WATER (L)
 METHANOL

=> s l1 and liquid phase

660109 LIQUID
 120283 LIQUIDS
 751153 LIQUID
 (LIQUID OR LIQUIDS)
 912082 LIQ
 87020 LIQS
 945866 LIQ
 (LIQ OR LIQS)
 1317126 LIQUID
 (LIQUID OR LIQ)
 1519688 PHASE
 322509 PHASES
 1656330 PHASE
 (PHASE OR PHASES)
 101714 LIQUID PHASE
 (LIQUID(W) PHASE)

L2 2 L1 AND LIQUID PHASE

=> d l2 ibib ab 1-2

L2 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:477060 CAPLUS

DOCUMENT NUMBER: 137:249446

TITLE: Kinetics of **liquid-phase** methanol
 synthesis over a Cu/ZnO/MnO₃/Al₂O₃ catalyst

AUTHOR(S): Nowicki, Lech

CORPORATE SOURCE: Wydż. Inz. Procesowej i Ochrony Środowiska, Politech.
 Łódzka, Łódź, 90-924, Pol.

SOURCE: Inzynieria Chemiczna i Procesowa (2002), 23(1), 83-98
CODEN: ICPRDT; ISSN: 0208-6425
PUBLISHER: Oficyna Wydawnicza Politechniki Wroclawskiej
DOCUMENT TYPE: Journal
LANGUAGE: Polish
AB Exptl. data for low-pressure **methanol** synthesis over Polish com.
Cu/ZnO/MnO₃/Al₂O₃ catalyst, obtained in a bench-scale stirred-tank slurry
reactor were used for kinetic modeling of this process. Exptl. conditions
were varied in the range as follows: slurry temperature of 493-523 K, reactor
pressure of 3-5 MPa, space velocity of 0.66-3.16 10⁻³ m³·kg⁻¹·s⁻¹, and H₂/CO feed gas ratio 1.6-4.0. Although it is believed
that **carbon dioxide** is the main source of carbon in
methanol synthesized on copper-containing catalysts and CO is
converted to CO₂ via **water** gas-shift reaction, the direct
hydrogenation of CO to **methanol** cannot be entirely excluded.
Thus the best way of modeling this reaction is take into account both
routes. The model developed in this paper is based on three overall
reactions: hydrogenation of CO and CO₂, and the **water** gas-shift.
A detailed reaction network, derived from mechanistic consideration
reported recently in the literature, is used as a basis for the
development of the rate expressions. It was assumed that **methanol**
is formed from adsorbed **hydrogen** atoms and **carbon**
monoxide mols. via partially hydrogenated species such as HCO,
H₂CO and H₃CO. The surface reaction between methoxy species (H₃CO) and
adsorbed **hydrogen** atoms is the rate-determining step. The synthesis
of **methanol** from **carbon dioxide** occurs via
formate species (HCO₂) adsorbed on the catalyst surface and hydrogenation
of this species is the rate-determining step in CO₂ hydrogenation pathway.
Methanol desorbs leaving adsorbed oxygen atoms on the catalyst
surface. These atoms can be removed by CO to give **carbon**
dioxide or they react with **hydrogen** to form
water. The kinetic model was derived by using Langmuir-Hinselwood
formalism and steady-state approximation for reaction intermediates. Molar
concentration of reagents in a slurry phase used in kinetic equations for
elementary steps were subsequently replaced by more convenient partial
pressures in a gas phase using Henry's law. The expts. were designed in
such a way that all mass transfer resistances could be negligible, so it
was assumed the gas phase and the **liq. phase** to be in
thermodynamical equilibrium. The kinetic model for **liq.-phase**
methanol synthesis developed in this study is given in Table 1.
The parameters ests. were obtained by minimizing the performance index
using the exptl. determined rates of **methanol** and **water**
formation. All the parameter values obtained are listed. The model
accurately predicts the rate of formation of **methanol** and
water in the whole range of operating conditions employed for this
study. The quality of the fit is shown, where the exptl. values of
methanol and **water** rates of production are plotted against
the estimated ones. The model developed in the present study was used for
simulation of the process to examine the effect of operating conditions on
the rate of formation of **methanol** from CO and CO₂. The calcn.
Showed that **methanol** is formed mainly from CO₂ and the extent of
CO hydrogenation increased with increasing of temperature, pressure and
residence time. It also depends on feed gas composition

L2 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1996:321345 CAPLUS

DOCUMENT NUMBER: 124:346545

TITLE: Manufacture of methanol from waste gas containing
carbon dioxide via reverse water gas shift reaction

INVENTOR(S): Uhm, Sung Jin; Han, Seong Hwan; Song, Suk Mok; Joo, Oh
Shim

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea

SOURCE: PCT Int. Appl., 18 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9606064	A1	19960229	WO 1995-KR109	19950819
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
KR 138587	B1	19980501	KR 1994-20457	19940819
JP 09510734	T2	19971028	JP 1995-507956	19950819
PRIORITY APPLN. INFO.:			KR 1994-20457	A 19940819
			WO 1995-KR109	W 19950819

AB MeOH is economically produced from CO₂ in a high yield by a process which comprises compressing a gaseous mixture of CO₂ and H₂, introducing the compressed gaseous mixture into a conversion column, converting a part of the CO₂ contained in the mixture to CO in the presence of catalyst to produce a gas phase mixture and a **liq. phase** mixture, removing the **liq. phase** mixture in a gas-liquid separator, introducing the gas phase mixture from the gas-liquid separator into a reactor while recycling, optionally, a part of the mixture into the conversion column, reacting the compressed gas phase mixture introduced into the reactor in the presence of a catalyst to produce a mixture containing MeOH, and recovering MeOH as a **liq. phase** product from the mixture

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NEWS	16	AUG 27 BIOCOMMERCE: Changes and enhancements to content coverage
NEWS	17	AUG 27 BIOTECHABS/BIOTECHDS: Two new display fields added for legal status data from INPADOC
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NEWS	20	SEP 01 New display format, HITSTR, available in WPIDS/WPINDEX/WPIX
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NEWS INTER		General Internet Information
NEWS LOGIN		Welcome Banner and News Items
NEWS PHONE		Direct Dial and Telecommunication Network Access to STN
NEWS WWW		CAS World Wide Web Site (general information)

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COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.21

0.21

FILE 'CAPLUS' ENTERED AT 15:06:06 ON 14 SEP 2004

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FILE LAST UPDATED: 13 Sep 2004 (20040913/ED)

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COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.44

0.65

FILE 'CAPLUS' ENTERED AT 15:06:30 ON 14 SEP 2004

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FILE COVERS 1907 - 14 Sep 2004 VOL 141 ISS 12

FILE LAST UPDATED: 13 Sep 2004 (20040913/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s carbon monoxide (1) hydrogen (1) carbon dioxide (1) water (1) methanol

1074557 CARBON
 23925 CARBONS
 1083274 CARBON
 (CARBON OR CARBONS)
 161023 MONOXIDE
 961 MONOXIDES
 161535 MONOXIDE
 (MONOXIDE OR MONOXIDES)
 136127 CARBON MONOXIDE
 (CARBON(W) MONOXIDE)
 835326 HYDROGEN
 5420 HYDROGENS
 838372 HYDROGEN
 (HYDROGEN OR HYDROGENS)
 1074557 CARBON
 23925 CARBONS
 1083274 CARBON
 (CARBON OR CARBONS)
 417334 DIOXIDE
 6352 DIOXIDES
 418937 DIOXIDE
 (DIOXIDE OR DIOXIDES)
 195179 CARBON DIOXIDE
 (CARBON(W) DIOXIDE)
 2162050 WATER
 241121 WATERS
 2214777 WATER
 (WATER OR WATERS)
 170202 METHANOL
 660 METHANOLS
 170548 METHANOL
 (METHANOL OR METHANOLS)
 L1 70 CARBON MONOXIDE (L) HYDROGEN (L) CARBON DIOXIDE (L) WATER (L)
 METHANOL

=> s l1 and liquid phase

660109 LIQUID
 120283 LIQUIDS
 751153 LIQUID
 (LIQUID OR LIQUIDS)
 912082 LIQ
 87020 LIQS
 945866 LIQ
 (LIQ OR LIQS)
 1317126 LIQUID
 (LIQUID OR LIQ)
 1519688 PHASE
 322509 PHASES
 1656330 PHASE
 (PHASE OR PHASES)
 101714 LIQUID PHASE
 (LIQUID(W) PHASE)

L2 2 L1 AND LIQUID PHASE

=> d l2 ibib ab 1-2

L2 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:477060 CAPLUS
 DOCUMENT NUMBER: 137:249446
 TITLE: Kinetics of **liquid-phase** methanol
 synthesis over a Cu/ZnO/MnO₃/Al₂O₃ catalyst
 AUTHOR(S): Nowicki, Lech
 CORPORATE SOURCE: Wydz. Inz. Procesowej i Ochrony Srodowiska, Politech.
 Lodzka, Lodz, 90-924, Pol.

SOURCE: Inzynieria Chemiczna i Procesowa (2002), 23(1), 83-98
CODEN: ICPRDT; ISSN: 0208-6425
PUBLISHER: Oficyna Wydawnicza Politechniki Wroclawskiej
DOCUMENT TYPE: Journal
LANGUAGE: Polish

AB Exptl. data for low-pressure **methanol** synthesis over Polish com. Cu/ZnO/MnO₃/Al₂O₃ catalyst, obtained in a bench-scale stirred-tank slurry reactor were used for kinetic modeling of this process. Exptl. conditions were varied in the range as follows: slurry temperature of 493-523 K, reactor pressure of 3-5 MPa, space velocity of 0.66-3.16 10⁻³ m³·kg⁻¹·s⁻¹, and H₂/CO feed gas ratio 1.6-4.0. Although it is believed that **carbon dioxide** is the main source of carbon in **methanol** synthesized on copper-containing catalysts and CO is converted to CO₂ via **water** gas-shift reaction, the direct hydrogenation of CO to **methanol** cannot be entirely excluded. Thus the best way of modeling this reaction is take into account both routes. The model developed in this paper is based on three overall reactions: hydrogenation of CO and CO₂, and the **water** gas-shift. A detailed reaction network, derived from mechanistic consideration reported recently in the literature, is used as a basis for the development of the rate expressions. It was assumed that **methanol** is formed from adsorbed **hydrogen** atoms and **carbon monoxide** mols. via partially hydrogenated species such as HCO, H₂CO and H₃CO. The surface reaction between methoxy species (H₃CO) and adsorbed **hydrogen** atoms is the rate-determining step. The synthesis of **methanol** from **carbon dioxide** occurs via formate species (HCO₂) adsorbed on the catalyst surface and hydrogenation of this species is the rate-determining step in CO₂ hydrogenation pathway. **Methanol** desorbs leaving adsorbed oxygen atoms on the catalyst surface. These atoms can be removed by CO to give **carbon dioxide** or they react with **hydrogen** to form **water**. The kinetic model was derived by using Langmuir-Hinselwood formalism and steady-state approximation for reaction intermediates. Molar concentration of reagents in a slurry phase used in kinetic equations for elementary steps were subsequently replaced by more convenient partial pressures in a gas phase using Henry's law. The expts. were designed in such a way that all mass transfer resistances could be negligible, so it was assumed the gas phase and the **liq. phase** to be in thermodynamical equilibrium. The kinetic model for **liq.-phase methanol** synthesis developed in this study is given in Table 1. The parameters ests. were obtained by minimizing the performance index using the exptl. determined rates of **methanol** and **water** formation. All the parameter values obtained are listed. The model accurately predicts the rate of formation of **methanol** and **water** in the whole range of operating conditions employed for this study. The quality of the fit is shown, where the exptl. values of **methanol** and **water** rates of production are plotted against the estimated ones. The model developed in the present study was used for simulation of the process to examine the effect of operating conditions on the rate of formation of **methanol** from CO and CO₂. The calcn. showed that **methanol** is formed mainly from CO₂ and the extent of CO hydrogenation increased with increasing of temperature, pressure and residence time. It also depends on feed gas composition

L2 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1996:321345 CAPLUS

DOCUMENT NUMBER: 124:346545

TITLE: Manufacture of methanol from waste gas containing carbon dioxide via reverse water gas shift reaction

INVENTOR(S): Uhm, Sung Jin; Han, Seong Hwan; Song, Suk Mok; Joo, Oh Shim

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S. Korea

SOURCE: PCT Int. Appl., 18 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9606064	A1	19960229	WO 1995-KR109	19950819
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
KR 138587	B1	19980501	KR 1994-20457	19940819
JP 09510734	T2	19971028	JP 1995-507956	19950819
PRIORITY APPLN. INFO.:			KR 1994-20457	A 19940819
			WO 1995-KR109	W 19950819

AB MeOH is economically produced from CO2 in a high yield by a process which comprises compressing a gaseous mixture of CO2 and H, introducing the compressed gaseous mixture into a conversion column, converting a part of the CO2 contained in the mixture to CO in the presence of catalyst to produce a gas phase mixture and a liq. phase mixture, removing the liq. phase mixture in a gas-liquid separator, introducing the gas phase mixture from the gas-liquid separator into a reactor while recycling, optionally, a part of the mixture into the conversion column, reacting the compressed gas phase mixture introduced into the reactor in the presence of a catalyst to produce a mixture containing MeOH, and recovering MeOH as a liq. phase product from the mixture

=> d his

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FILE 'CAPLUS' ENTERED AT 15:06:06 ON 14 SEP 2004

FILE 'CAPLUS' ENTERED AT 15:06:30 ON 14 SEP 2004

L1 70 S CARBON MONOXIDE (L) HYDROGEN (L) CARBON DIOXIDE (L) WATER (L)
L2 2 S L1 AND LIQUID PHASE

=> s l1 and (slurry bed or slurry reactor)

86505 SLURRY
25750 SLURRIES
95611 SLURRY
(SLURRY OR SLURRIES)
151185 BED
61822 BEDS
173690 BED
(BED OR BEDS)
151 SLURRY BED
(SLURRY(W)BED)
86505 SLURRY
25750 SLURRIES
95611 SLURRY
(SLURRY OR SLURRIES)
383423 REACTOR
228531 REACTORS
429414 REACTOR
(REACTOR OR REACTORS)
1254 SLURRY REACTOR
(SLURRY(W)REACTOR)

L3 1 L1 AND (SLURRY BED OR SLURRY REACTOR)

=> d l3 ibib ab

L3-----ANSWER 1 OF 1-----CAPLUS-----COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:477060 CAPLUS

DOCUMENT NUMBER: 137:249446
TITLE: Kinetics of liquid-phase methanol synthesis over a Cu/ZnO/MnO₃/Al₂O₃ catalyst
AUTHOR(S): Nowicki, Lech
CORPORATE SOURCE: Wydz. Inz. Procesowej i Ochrony Srodowiska, Politech. Lodzka, Lodz, 90-924, Pol.
SOURCE: Inzynieria Chemiczna i Procesowa (2002), 23(1), 83-98
CODEN: ICPRDT; ISSN: 0208-6425
PUBLISHER: Oficyna Wydawnicza Politechniki Wroclawskiej
DOCUMENT TYPE: Journal
LANGUAGE: Polish

AB Exptl. data for low-pressure **methanol** synthesis over Polish com. Cu/ZnO/MnO₃/Al₂O₃ catalyst, obtained in a bench-scale stirred-tank **slurry reactor** were used for kinetic modeling of this process. Exptl. conditions were varied in the range as follows: slurry temperature of 493-523 K, reactor pressure of 3-5 MPa, space velocity of 0.66-3.16 10⁻³ m³·kg⁻¹·s⁻¹, and H₂/CO feed gas ratio 1.6-4.0. Although it is believed that **carbon dioxide** is the main source of carbon in **methanol** synthesized on copper-containing catalysts and CO is converted to CO₂ via **water** gas-shift reaction, the direct hydrogenation of CO to **methanol** cannot be entirely excluded. Thus the best way of modeling this reaction is take into account both routes. The model developed in this paper is based on three overall reactions: hydrogenation of CO and CO₂, and the **water** gas-shift. A detailed reaction network, derived from mechanistic consideration reported recently in the literature, is used as a basis for the development of the rate expressions. It was assumed that **methanol** is formed from adsorbed **hydrogen** atoms and **carbon monoxide** mols. via partially hydrogenated species such as HCO, H₂CO and H₃CO. The surface reaction between methoxy species (H₃CO) and adsorbed **hydrogen** atoms is the rate-determining step. The synthesis of **methanol** from **carbon dioxide** occurs via formate species (HCO₂) adsorbed on the catalyst surface and hydrogenation of this species is the rate-determining step in CO₂ hydrogenation pathway. **Methanol** desorbs leaving adsorbed oxygen atoms on the catalyst surface. These atoms can be removed by CO to give **carbon dioxide** or they react with **hydrogen** to form **water**. The kinetic model was derived by using Langmuir-Hinshelwood formalism and steady-state approximation for reaction intermediates. Molar concentration of reagents in a slurry phase used in kinetic equations for elementary steps were subsequently replaced by more convenient partial pressures in a gas phase using Henry's law. The expts. were designed in such a way that all mass transfer resistances could be negligible, so it was assumed the gas phase and the liquid phase to be in thermodynamical equilibrium. The kinetic model for liquid-phase **methanol** synthesis developed in this study is given in Table 1. The parameters ests. were obtained by minimizing the performance index using the exptl. determined rates of **methanol** and **water** formation. All the parameter values obtained are listed. The model accurately predicts the rate of formation of **methanol** and **water** in the whole range of operating conditions employed for this study. The quality of the fit is shown, where the exptl. values of **methanol** and **water** rates of production are plotted against the estimated ones. The model developed in the present study was used for simulation of the process to examine the effect of operating conditions on the rate of formation of **methanol** from CO and CO₂. The calcn. showed that **methanol** is formed mainly from CO₂ and the extent of CO hydrogenation increased with increasing of temperature, pressure and residence time. It also depends on feed gas composition

=> d his

(FILE 'HOME' ENTERED AT 15:05:57 ON 14 SEP 2004)

FILE 'CAPLUS' ENTERED AT 15:06:06 ON 14 SEP 2004

FILE 'CAPLUS' ENTERED AT 15:06:30 ON 14 SEP 2004

L1 70 S CARBON MONOXIDE (L) HYDROGEN (L) CARBON DIOXIDE (L) WATER (L)
L2 2 S L1 AND LIQUID PHASE
L3 1 S L1 AND (SLURRY BED OR SLURRY REACTOR)

=> s l1 and inert liquid

133856 INERT
586 INERTS
134289 INERT
(INERT OR INERTS)
660109 LIQUID
120283 LIQUIDS
751153 LIQUID
(LIQUID OR LIQUIDS)
912082 LIQ
87020 LIQS
945866 LIQ
(LIQ OR LIQS)
1317126 LIQUID
(LIQUID OR LIQ)
1306 INERT LIQUID
(INERT(W)LIQUID)
L4 0 L1 AND INERT LIQUID

=> s l1 and liquid medium

660109 LIQUID
120283 LIQUIDS
751153 LIQUID
(LIQUID OR LIQUIDS)
912082 LIQ
87020 LIQS
945866 LIQ
(LIQ OR LIQS)
1317126 LIQUID
(LIQUID OR LIQ)
666261 MEDIUM
3701 MEDIUMS
275595 MEDIA
175 MEDIAS
867470 MEDIUM
(MEDIUM OR MEDIUMS OR MEDIA OR MEDIAS)
14819 LIQUID MEDIUM
(LIQUID(W)MEDIUM)
L5 0 L1 AND LIQUID MEDIUM

=> s l1 and liquid starter

660109 LIQUID
120283 LIQUIDS
751153 LIQUID
(LIQUID OR LIQUIDS)
912082 LIQ
87020 LIQS
945866 LIQ
(LIQ OR LIQS)
1317126 LIQUID
(LIQUID OR LIQ)
7367 STARTER
1636 STARTERS
8106 STARTER
(STARTER OR STARTERS)

11 LIQUID STARTER
 (LIQUID(W) STARTER)
L6 0 L1 AND LIQUID STARTER

=> s l1 and liquid phase
 660109 LIQUID
 120283 LIQUIDS
 751153 LIQUID
 (LIQUID OR LIQUIDS)
 912082 LIQ
 87020 LIQS
 945866 LIQ
 (LIQ OR LIQS)
1317126 LIQUID
 (LIQUID OR LIQ)
1519688 PHASE
322509 PHASES
1656330 PHASE
 (PHASE OR PHASES)
101714 LIQUID PHASE
 (LIQUID(W) PHASE)

L7 2 L1 AND LIQUID PHASE

=> s l1 and catalyst suspen? (l) liquid (2a) methanol
 665986 CATALYST
 670508 CATALYSTS
 853598 CATALYST
 (CATALYST OR CATALYSTS)
338634 SUSPEN?
 1003 CATALYST SUSPEN?
 (CATALYST(W) SUSPEN?)
 660109 LIQUID
 120283 LIQUIDS
 751153 LIQUID
 (LIQUID OR LIQUIDS)
 912082 LIQ
 87020 LIQS
 945866 LIQ
 (LIQ OR LIQS)
1317126 LIQUID
 (LIQUID OR LIQ)
170202 METHANOL
 660 METHANOLS
170548 METHANOL
 (METHANOL OR METHANOLS)
4 CATALYST SUSPEN? (L) LIQUID (2A) METHANOL
L8 0 L1 AND CATALYST SUSPEN? (L) LIQUID (2A) METHANOL

=> s l1 and catalyst suspen? (4a) methanol
 665986 CATALYST
 670508 CATALYSTS
 853598 CATALYST
 (CATALYST OR CATALYSTS)
338634 SUSPEN?
 1003 CATALYST SUSPEN?
 (CATALYST(W) SUSPEN?)
170202 METHANOL
 660 METHANOLS
170548 METHANOL
 (METHANOL OR METHANOLS)
3 CATALYST SUSPEN? (4A) METHANOL
L9 0 L1 AND CATALYST SUSPEN? (4A) METHANOL

=> s liquid phase and methanol synthesis.

660109 LIQUID
 120283 LIQUIDS
 751153 LIQUID
 (LIQUID OR LIQUIDS)
 912082 LIQ
 87020 LIQS
 945866 LIQ
 (LIQ OR LIQS)
 1317126 LIQUID
 (LIQUID OR LIQ)
 1519688 PHASE
 322509 PHASES
 1656330 PHASE
 (PHASE OR PHASES)
 101714 LIQUID PHASE
 (LIQUID(W) PHASE)
 170202 METHANOL
 660 METHANOLS
 170548 METHANOL
 (METHANOL OR METHANOLS)
 1140121 SYNTHESIS
 3 SYNTHESISES
 62479 SYNTHESSES
 1175511 SYNTHESIS
 (SYNTHESIS OR SYNTHESISES OR SYNTHESSES)
 3443 METHANOL SYNTHESIS
 (METHANOL(W) SYNTHESIS)
 L10 186 LIQUID PHASE AND METHANOL SYNTHESIS

=> s l10 and hydrogen (L) carbon dioxide and carbon monoxide

835326 HYDROGEN
 5420 HYDROGENS
 838372 HYDROGEN
 (HYDROGEN OR HYDROGENS)
 1074557 CARBON
 23925 CARBONS
 1083274 CARBON
 (CARBON OR CARBONS)
 417334 DIOXIDE
 6352 DIOXIDES
 418937 DIOXIDE
 (DIOXIDE OR DIOXIDES)
 195179 CARBON DIOXIDE
 (CARBON(W)DIOXIDE)
 11370 HYDROGEN (L) CARBON DIOXIDE
 1074557 CARBON
 23925 CARBONS
 1083274 CARBON
 (CARBON OR CARBONS)
 161023 MONOXIDE
 961 MONOXIDES
 161535 MONOXIDE
 (MONOXIDE OR MONOXIDES)
 136127 CARBON MONOXIDE
 (CARBON(W) MONOXIDE)

L11 3 L10 AND HYDROGEN (L) CARBON DIOXIDE AND CARBON MONOXIDE

=> d his

(FILE 'HOME' ENTERED AT 15:05:57 ON 14 SEP 2004)

FILE 'CAPLUS' ENTERED AT 15:06:06 ON 14 SEP 2004

FILE 'CAPLUS' ENTERED AT 15:06:30 ON 14 SEP 2004

L1 70 S CARBON MONOXIDE (L) HYDROGEN (L) CARBON DIOXIDE (L) WATER (L)
 L2 2 S L1 AND LIQUID PHASE
 L3 1 S L1 AND (SLURRY BED OR SLURRY REACTOR)
 L4 0 S L1 AND INERT LIQUID
 L5 0 S L1 AND LIQUID MEDIUM
 L6 0 S L1 AND LIQUID STARTER
 L7 2 S L1 AND LIQUID PHASE
 L8 0 S L1 AND CATALYST SUSPEN? (L) LIQUID (2A) METHANOL
 L9 0 S L1 AND CATALYST SUSPEN? (4A) METHANOL
 L10 186 S LIQUID PHASE AND METHANOL SYNTHESIS
 L11 3 S L10 AND HYDROGEN (L) CARBON DIOXIDE AND CARBON MONOXIDE

=> s l11 not l2
 L12 2 L11 NOT L2

=> d l12 ibib ab 1-2

L12 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:86724 CAPLUS

DOCUMENT NUMBER: 132:110297

TITLE: Carbon dioxide tolerance in the single-stage
liquid-phase synthesis of dimethyl
 ether

AUTHOR(S): Sardesai, Abhay; Gunda, Arun; Tartamella, Tim; Lee,
 Sunggyu

CORPORATE SOURCE: Department of Chemical Engineering, University of
 Missouri-Columbia, Columbia, MO, 65211, USA

SOURCE: Energy Sources (2000), 22(1), 77-82
 CODEN: EGYSAO; ISSN: 0090-8312

PUBLISHER: Taylor & Francis Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB In the **liq.-phase** di-Me ether process,
methanol synthesis catalyst (Cu / ZnO / Al₂O₃) and
 methanol dehydration catalyst (γ-alumina) are slurried in an inert
 liquid medium. The inert liquid medium used in this investigation is a white
 mineral oil, Witco-40. This multiphase reaction is conducted in a mech.
 agitated slurry reactor. In this process, syngas conversion can be
 significantly improved by coprodn. of di-Me ether along with methanol.
 The coprodn. strategy improves the thermodyn. and kinetic environment of
 the reaction system. The effects of catalyst loadings in the slurry and
 the roles played by carbon dioxide in di-Me ether synthesis were studied
 by conducting kinetic expts. The **liq.-phase** di-Me
 ether synthesis process exhibits higher carbon dioxide tolerance as
 compared to the **liq.-phase methanol**
synthesis process, whose optimal carbon dioxide concentration in the
 unbalanced syngas feed is around 8%. These results have been exptl.
 confirmed.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1995:449971 CAPLUS

DOCUMENT NUMBER: 122:190990

TITLE: Global kinetics of **methanol**
synthesis in three-phase slurry reactor

AUTHOR(S): Chen, Minsong; Ying, Weiyong; Fang, Dingye; Zhu,
 Bingchen

CORPORATE SOURCE: Department Chemical Engineering, East China University
 Science Technology, Shanghai, Peop. Rep. China

SOURCE: Ranliao Huaxue Xuebao (1994), 22(4), 380-5
 CODEN: RHXUD8; ISSN: 0253-2409

PUBLISHER: Kexue

DOCUMENT TYPE: Journal

LANGUAGE:

Chinese

AB The global kinetics of **methanol synthesis** from **carbon monoxide, carbon dioxide, and hydrogen** was investigated in a three-phase slurry reactor with mech. agitator. Reaction conditions were as follows: pressure 5 MPa, temperature 210-250 °C, C301 copper catalyst size 0.125.apprx.0.154 mm (100 .apprx. 120 mesh), liquid paraffin as inert **liq. phase** and speed of agitator 950 rpm. The methanol concentration in the gaseous product was 7.apprx!8%, which was higher than that in the traditional gas-solid catalytic process. By the improved Gauss-Newton method, Langmuir-Hinshelwood type global kinetic models of the parallel hydrogenation of CO and CO₂ were developed in terms of fugacities of reaction components.

WEST Search History

DATE: Tuesday, September 14, 2004

Hide?	Set Name	Query	Hit Count
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L15	l12 and liquid medium	0
<input type="checkbox"/>	L14	l12 and inert	1
<input type="checkbox"/>	L13	L12 and inert liquid	0
<input type="checkbox"/>	L12	3501516.pn.	6
<input type="checkbox"/>	L11	L10 not l6	9
<input type="checkbox"/>	L10	L9 not l7	9
<input type="checkbox"/>	L9	L8 and methyl formate and cooling and recycl\$3	10
<input type="checkbox"/>	L8	carbon monoxide with hydrogen with carbon dioxide with methanol with water	379
<input type="checkbox"/>	L7	l4 and methyl formate and recycl\$3	1
<input type="checkbox"/>	L6	L5 and recycl\$3	5
<input type="checkbox"/>	L5	L4 and (slurry bed or slurry reactor, or bubble column reactor)	5
<input type="checkbox"/>	L4	L3 and liquid phase with water	35
<input type="checkbox"/>	L3	carbon monoxide with hydrogen with carbon dioxide with methanol	874
<input type="checkbox"/>	L2	L1 and liquid phase with water	0
<i>DB=PGPB,USPT; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L1	carbon monoxide with hydrogen with carbon dioxide with methanol	625

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End of Result Set



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L37: Entry 1 of 1

File: USPT

Jan 24, 1995

DOCUMENT-IDENTIFIER: US 5384335 A

TITLE: Methanol synthesis using a catalyst combination of alkali or alkaline earth salts and reduced copper chromite

Brief Summary Text (12):

The methanol synthesis reaction is very exothermic. Poor heat transfer in the catalyst bed results in an outlet methanol concentration limited to 5-6 mole %. Either cool unreacted gas injected at stages in the catalyst bed or internal cooling surfaces is generally used to control the bed temperature. To achieve maximum conversion of the carbon oxides, an excess of H.sub.2 is used. The excess of H.sub.2 requires a high recycle ratio which, in turn, leads to greater expense. Therefore, any modification in the process technology that can enhance heat transfer will result in higher conversions. Furthermore, a decrease in operating temperature could result in lower energy consumption and a higher equilibrium conversion.

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